

REMARKS

Claims 1-24 are pending. Applicants thank the Examiner for withdrawal of finality of the prior office action and offer the remarks below to address the new rejections.

Amendments to the Claims

In claim 1, "substrate" has been amended to -- integrated-device substrate --, and "the particle catalyzes the polymerization of the monomer" has been amended to -- a particle that catalyzes the polymerization of the monomer is disposed on the substrate --. Applicant submits that the amendment is simply clarifying and does not change the scope of the claim.

In claim 7, "the composition of the particle" has been amended to -- a composition of the particle --.

In claim 12, "a plurality of monomers" has been amended to -- the plurality of monomers --.

In claim 13, "a plurality of monomers" has been amended to -- the plurality of monomers --.

In claim 18, "the vapor phase" has been amended to -- a vapor phase --.

Claim Objections

Claims 7 and 8 stand objected to for lacking antecedent basis for "the composition of the particle." Claim 7 has been amended to recite -- a composition of the particle --. Claim 8 is dependent on claim 7.

Claims 11 and 12 stand objected to for lacking antecedent basis for "a plurality of monomers." Applicant believes that the Examiner is referring to claims 12 and 13. Accordingly, claims 12 and 13 have been amended to recite -- the plurality of monomers --.

Claim 18 stands objected to for lacking antecedent basis for "the vapor phase." Claim 18 has been amended to recite -- a vapor phase --.

Applicant submits that the claim amendments overcome the Examiner's objections. Applicant further submits that the amendments to claims 7, 12, 13, and 18 simply correct informalities and do not change the scopes of the claims.

Claim Rejections Under 35 U.S.C. § 102

Claims 1, 6, 11-13, and 24 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 6,646,243 (Pirrung). "A claim is anticipated only if each and every element as set

forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co.*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987).

Claim 1 as amended recites in part “wherein a particle that catalyzes the polymerization of the monomer.” Pirrung does not disclose a particle that catalyzes the polymerization of a monomer. The Examiner relies on col. 7, ll. 8–17. The cited portion of the specification describes catalytic polypeptides, which appear to be a type of receptor useful in screening a polymer for biological activity. *See, e.g.* Pirrung at 3:33–36 (“To screen for biological activity, the substrate is exposed to one or more *receptors* such as antibody whole cells, receptors on vesicles, lipids, or any one of a variety of other receptors.”) (emphasis added). The catalytic polypeptides “are capable of promoting a chemical reaction involving the conversion of one or more reactants to one or more products.” Pirrung at 7:8–11. Pirrung does not disclose either that the catalytic polypeptide catalyzes the polymerization of a monomer or that the catalytic polypeptide is a particle. Accordingly, the cited portion does not disclose a particle that catalyzes the polymerization of a monomer.

The Examiner characterizes col. 10, ll. 51–67 as disclosing a particle that catalyzes a monomer. The cited portion is the beginning of a section (10:51–15:24) describing the synthesis of *substrate-bound* polymer chains, for example, as illustrated in FIG. 1, illustrating a substrate 2 on which a layer of linker molecules 6 is disposed, and to which monomers 12a and 12b are bonded (FIG. 2). These polymer chains are synthesized *stoichiometrically*, not catalytically. Pirrung does not disclose a catalytic polymerization reaction. Consequently, the cited portion also does not disclose a particle that catalyzes the polymerization of a monomer.

Claim 1 also recites in part “detecting the particle using a particle counter.” Pirrung also does not disclose this feature. The Examiner relies on FIG. 9. According to the specification, “FIG. 9 illustrates a fluorescent detection device for detecting fluorescently labeled receptors on a substrate.” Pirrung at 20:16–17. The portions of the specification cited by the Examiner are in accord. None of these portions discloses the detecting of a particle using a “particle counter” as recited in claim 1. For example, both col. 3, l. 66 to col. 4 l. 16, and col. 20, l. 21 to col. 21, l. 15 describe detecting a fluorescently labeled receptor bound to one or more polymer sequences disposed on a surface of a substrate. Col. 24, ll. 32–63 discloses the detection capability of the

apparatus illustrated in FIG. 9 for detecting fluorescence, in this case, of standardized fluorescent beads. The cited portion does not disclose that the apparatus is a particle counter or that the beads catalyze the polymerization of any compound.

The Examiner also refers to FIGS. 1-20, every drawing in Pirrung, as disclosing "detecting the particle using a particle counter." None of the drawings appears to disclose a particle, the detection thereof, or a particle counter.

Applicant further submits that Pirrung does not anticipate claim 1 because there is no identity of invention between Pirrung and claim 1. "Identity of invention is a question of fact, and one who seeks such a finding must show that each element of the claim in issue is found, either expressly or under principles of inherency, in a single prior art reference, or that the claimed invention was previously known or embodied in a single prior art device or practice." *Minnesota Min. & Mfg. v. Johnson & Johnson*, 976 F.2d 1559, 1565, 24 U.S.P.Q.2d 1321 (Fed. Cir. 1992) (emphasis added). M.P.E.P. 2131 is in accord: "The elements must be arranged as required by the claim." *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990).

Pirrung simply does not disclose the method recited in claim 1. Instead, the Examiner has assembled the features of claim 1 by picking and choosing from disparate elements in Pirrung. Such picking and choosing is improper. Otherwise, a dictionary would anticipate nearly any claim.

For example, the Examiner relies on col. 3, ll. 7-11, 58-65 and col. 5, l. 65 to col. 6, l. 9 as disclosing contacting a substrate with a monomer, and col. 7, ll. 8-17 and col. 10, ll. 51-67 as disclosing a particle that catalyzes the polymerization of the monomer. As discussed above, col. 3, 7-11 58-65; col. 5, l. 65 to col. 6, l. 9; and col. 10, ll. 51-67 are related to the synthesis of a *substrate-bound* polymer using a series of *stoichiometric* (i.e., non-catalytic) reactions. In contrast, col. 7, ll. 8-17 discloses catalytic polypeptide receptors, which are not used in synthesizing the substrate-bound polymer. Consequently, Pirrung does not disclose "a single prior art device or practice" for even "contacting the substrate with a monomer, wherein the particle catalyzes the polymerization of the monomer."

The Examiner has not shown identity of invention in Pirrung between "contacting the substrate with a monomer, wherein a particle that catalyzes the polymerization of the monomer is disposed on the substrate" and "detecting the particle using a particle counter." As discussed

above, for the “detecting the particle using a particle counter” feature, the Examiner relies on a method for measuring fluorescence, which is not used in the synthesis of the substrate-bound polymer.

Thus, in addition to failing to teach each and every feature of the claims, the rejection is also an inappropriate attempt to combine disparate disclosures within Pirrung by treatment under the rubric of “anticipation,” despite the fact that the reference does not teach or suggest all of the claimed elements arranged “in the manner claimed.” For at least these reasons, Pirrung does not anticipate claim 1. Because claims 6, 11–13, and 24 are dependent on claim 1 and recite additional features, these claims are also not anticipated by Pirrung for at least the same reasons.

Claim Rejections Under 35 U.S.C. § 103

A *prima facie* rejection for obviousness requires: (1) a disclosure or suggestion of every element of the claim in the cited reference or references; (2) a suggestion or motivation, in the references or known to one skilled in the art, to modify or combine the references; and (3) a reasonable expectation of success. The suggestion to combine and the reasonable expectation of success must be found in the cited references. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Each of the rejections under 35 U.S.C. § 103 rely on Pirrung as the primary reference. Pirrung is not analogous art, and accordingly, the rejections are improper for at least this reason. “In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned.” *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992); M.P.E.P. 2141.01(a).

Pirrung is not in the same field of endeavor as the pending claims. Claim 1 is directed to a method for detecting a particle on a substrate “used in the fabrication of an integrated device.” Pirrung discloses a “method and apparatus for preparation of a substrate containing a plurality of sequences” (Pirrung at Abstract), which is not in the field of fabrication of an integrated device.

Pirrung is also not pertinent to the particular problem with which the inventor was concerned. Particle contamination in the manufacture of integrated devices is among the problems identified in the present application. Specification at ¶ [0002] (“Particulate contaminants are undesirable in the fabrication of integrated devices.”). Pirrung is directed to

substrate-bound polymers, for example, polypeptides. Accordingly, Pirrung is not pertinent to the manufacture of integrated devices, and is not analogous art. Indeed, Pirrung is not concerned with the detection of particle on a substrate at all – rather, *known* elements (linker molecules) are provided on the substrate and polymer chains synthesized non-catalytically thereon. The polymer chains themselves are also not detected. Rather, it is suggested that this substrate with *known* features bound thereto is useful for binding elements (*e.g.*, antibodies, cells, lipids, *etc.*) of an analyte, and those bound elements are detected. Thus, Pirrung is not concerned with detection of the “particles” or anything else that is on the substrate or polymerized on the substrate. It is only after binding elements from analyte that a detection step is taken, and in that case it is the bound elements being detected, not the original “particles” or polymers formed thereon. Consequently, claim 1 is patentable over the cited references for at least this reason.

Claim Rejections over Pirrung and Berger

Claims 2, 4, and 5 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Pirrung in view of Berger (U.S. Patent No. 4,967,095). The Examiner relies on Berger only for disclosing a particle counter that detects a property selected from the group consisting of number of particles, sizes of the particles, positions of the particles; an optical particle counter; and a laser scanner particle counter. As discussed, Pirrung does not disclose or suggest every feature of claim 1, from which claims 2, 4, and 5 depend. Accordingly, the combination of Pirrung and Berger also do not disclose or suggest every feature recited in these claims.

Moreover, the Examiner has not provided a proper motivation to combine the Pirrung and Berger. The Examiner’s purported motivation is “for the purpose of detecting particles on the surface more accurately.” As discussed above, Pirrung does not disclose or suggest detecting particles at all. Accordingly, one skilled in the art would have no motivation to combine Pirrung with Berger.

Claim Rejections over Pirrung and Yamauchi

Claims 3 and 14–17 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Pirrung in view of Yamauchi (U.S. Patent No. 4,965,454). The Examiner relies on Yamauchi only for disclosing a particle counter that detects particles on both sides of a substrate; a metal particle; a copper particle; and silicon wafers. Because claims 3 and 14–17 are dependent on claim 1 and

Pirrung does not disclose or suggest every feature recited in claim 1, Pirrung and Yamauchi do not disclose or suggest every feature recited in claims 3 and 14-17.

The Examiner's motivations to combine the references are also improper. With respect to claims 3, 14, 16, and 17, the Examiner's stated motivation is "for the purpose of detecting particles on both of the surface[s] of the] substrate [with] more accuracy." As discussed above, Pirrung does not disclose or suggest detecting particles. Furthermore, Pirrung does not disclose performing any operation on a backside of a substrate. Accordingly, one skilled in the art would have no motivation to interrogate the backside of the substrate of Pirrung.

With respect to claim 17, the Examiner states that one skilled in the art would select a known material on the basis of suitability for the intended use as a matter of design choice, relying on *In re Leshin*, 125, U.S.P.Q. 416. The Examiner's reliance on *In re Leshin* is misplaced. In *In re Leshin*, the court held that selecting a known plastic to make a container of a type made of plastics prior to the invention was obvious. In the present case, the Examiner has not produced any evidence of any particle that catalyzes the polymerization of a monomer. Moreover, the intended use of the present invention (detecting particles on a substrate) has no relationship to the intended use of the prior art combination. Accordingly, one skilled in the art would have no reason to select a copper particle.

Claim Rejections over Pirrung and Coté

Claims 7-10 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Pirrung in view of Coté (U.S. Patent No. 6,485,703).^{*} The Examiner depends on Coté only for the disclosure of identifying a composition of a particle by its polymerization rate of a polymer, and a monomer polymerized by a plurality of particle types. Because claims 7-10 depend on claim 1 and Pirrung does not disclose or suggest every feature in claim 1, Pirrung and Coté also do not disclose or suggest every feature in claims 7-10.

Moreover, the portions of Coté cited by the Examiner do not appear to disclose either of the features cited by the Examiner. Coté appears to be directed to hydrogel particles useful for detecting an analyte. Coté at Abstract.

^{*} The Office Action refers to the reference as "Tote et al (U.S. Patent No. 4,965,454); however, U.S. Patent No. 4,965,454 is Yamauchi, discussed above. The form PTO-892 lists as a

Cited col. 6, ll. 41–60 discloses a composition comprising a hydrogel and additional monomers. The cited passage does not discuss identifying a composition by polymerization rate of a monomer, or even a polymerization rate. Cited col. 13, l. 62 to col. 14, l. 26 appears to disclose suitable sizes for hydrogel particles and suitable analytes, but also does not appear to be related to identifying a composition by a polymerization rate. FIG. 1 is described as an optical system for fluorescence measurements. Coté at 15:31–32. In Example 1, the apparatus is described as a “commercial SPEX Fluorolog spectrometer.” Coté at 38:62. Example 1 does not disclose identifying a composition by a polymerization rate. FIG. 8 is described a method for patterning a hydrogel, and does not disclose identifying a composition by a polymerization rate. Coté at 46:59–47:6. FIG. 9A is described as illustrating a bench-top fluorescent unit useful for producing measurable changes in fluorescence intensity of polymer particles illustrated in FIG. 9B. Coté at 47:58–48:4 (Example 3). Example 3 does not appear to be related to identifying a composition of a particle by its polymerization rate of a monomer.

Cited col. 24, ll. 24–67 appears to describe compositions of hydrogel particles for detecting different analytes as well as particle sizes. The cited portion does not disclose or suggest a monomer polymerized by a plurality of particle types.

The Examiner’s motivation to combine is also improper. The Examiner’s stated motivation is “for the purpose of detecting particles on the surface with more accuracy.” As discussed above, neither of the cited references discloses detecting particles, and accordingly, there would be no motivation to combine the references for the alleged reason.

Moreover, Coté is not analogous art for the same reasons that Pirrung is not analogous art. Coté is directed to detecting analytes *in vivo*, while the pending claims are directed to a method for detecting a particle on a substrate used in the fabrication of an integrated device.

Claim Rejections over Pirrung and Dower

Claim 18 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Pirrung in view of Dower (U.S. Patent No. 7,056,666). The Examiner relies on Dower only for disclosing a vapor phase monomer. Because claim 18 is dependent on claim 1 and Pirrung does not disclose or suggest every feature of claim 1, Pirrung and Dower also do not disclose or suggest every

reference cited, “Cote et al. (U.S. Patent No. 6,485,703),” which is not otherwise referenced in the Office Action. In this response “Cote” is taken to refer to the Coté reference.

element recited in claim 18. Moreover, the cited portion of Dower (col. 8, l. 65 to col. 9, l. 20) does not disclose a vapor phase monomer. Instead Dower is directed to sequencing biological polymers. Dower at Abstract.

The Examiner's purported motivation to combine – “for the purpose of detecting particles on both of the surface substrate [with] more accuracy” – is also improper for at least the reason that claim 18 does not recite detecting particles on both sides of a substrate, and also fails because neither reference discloses detecting a particle on a substrate.

Furthermore, Dower, which is directed to sequencing biological polymers, is not analogous art for the same reasons as Pirrung.

Claim Rejections over Pirrung and Tanaka

Claim 19–23 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Pirrung in view of Tanaka (U.S. Patent No. 5,100,762). The Examiner relies on Tanaka only for the disclosure alkene monomers. Because claims 19–23 are dependent on claim 1 and Pirrung does not disclose or suggest every feature recited in claim 1, Pirrung and Tanaka do not disclose or suggest every feature recited in claims 19–23.

With respect to motivation to combine, for claims 19, 20, and 22, the Examiner states “for the purpose of good capacity to form homogeneous films and high sensitivities at a specific wavelength allowing efficient development.” The Examiner has provided no evidence whatsoever of how forming “homogeneous films and high sensitivities at a specific wavelength allow[s] efficient development” of the “Nucleic Acid Reading and Analysis System” of Pirrung.

This motivation to combine is completely unrelated to the pending claims. Accordingly, the Examiner appears to be engaged in a completely *post-hoc* reconstruction of the claim elements. “If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention.” *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457–58 (Fed. Cir. 1998).

With respect to claims 21 and 23, the Examiner relies on design choice, citing *In re Leshin*. In such a rejection, the Examiner must show an art recognized suitability of the material

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for its intended use. M.P.E.P. 2144.07. With respect to claim 21, the Examiner must at least show that one skilled in the art would understand that aniline or thiophene are useful in the radiation-sensitive polymer described in Tanaka. With respect to claim 23, the Examiner must at least show that benzyl bromide is useful as an initiator for the radiation-sensitive polymer. The Examiner has failed to make either showing.

For the reasons provided above, Applicant submits that all outstanding rejections in this application are overcome, or are improper and should be withdrawn. Applicant has provided what are believed to be sufficient bases for overcome each rejection, but has not provided all possible bases. Accordingly, Applicant does not acquiesce to any of the Examiner's characterizations of the cited references or claims not specifically traversed herein. If the Examiner believes that any remaining issues could be resolved in a conversation with the Applicants attorney, the Examiner is invited to contact the undersigned. Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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